Patients are constantly in motion. They go from their primary care physician to an imaging center and on to a specialist. Or they're admitted from the emergency department or a critical care center to an in-patient bed. From there they could end up in any one of a variety of post-acute care settings. And, to ensure high-quality care, their personal health data must follow them at every stop along the way.

Data across the care continuum is especially important as the healthcare industry moves from a fee-for-service model to one that rewards better outcomes, greater efficiency and shifts responsibility for entire populations of patients to medical homes and accountable care organizations. Meanwhile, penalties for patients readmitted within 30 days creates a further financial incentive.

At an event hosted by FierceHealthIT, a group of 30 CIOs, CMIOs and other executives from provider organizations across the country gathered in Chicago during the Healthcare Information and Management Systems Society’s annual conference to discuss the rewards and challenges of implementing data analytics across the continuum of care.

Several common themes emerged among the executives at the event, which was sponsored by Agfa Healthcare and Caradigm.
Most agreed, for example, that all the data in the world does no good if it can't be shared across the enterprise and with other organizations, such as post acute-care facilities.

**MAKING SENSE OF THE DATA**

One CIO at the *FierceHealthIT* event said her post-acute care facility has 30 different IT systems. She said she wants one system that can collect and aggregate data from all those sources.

It’s a common wish—and a tall order.

“We can direct care based on the latest research and historical data on the patient.”

Lac Tran, CIO, Rush University Medical Center, Chicago

“The sheer volume of healthcare data make it incredibly difficult to harness, consume and utilize in an effective, meaningful way,” Charles Christian, vice president and CIO of St. Francis Hospital in Columbus, Georgia, said in an interview with *FierceHealthIT* ahead of the event.

**USING DATA TO MANAGE POPULATION HEALTH**

Chicago’s Rush University Medical Center has successfully used predictive analytics to improve quality and efficiency, reduce readmissions, treat patients at risk for stroke and cardiac arrest quickly and reduce wait times, diversions and boarding in the emergency department.

It began on a relatively small scale: Combing through three years of historical data from patients who were admitted to the hospital after a heart attack or stroke to find patterns that a team of clinicians then could

**THE UPS AND DOWNS OF IMAGE SHARING**

Of all the data analytics and interoperability challenges health IT leaders face, one of the most protracted is image sharing. Massive files, multiple platforms and systems, constant demands for upgrades and additional functionality and the need to share images across multiple settings are just a few of the reasons it’s one of the biggest challenges for today’s healthcare organizations.

With a growing focus on accountable care and population health management, sharing images—not only within departments but across organizations—is going to be “vitally important,” HIMSS Analytics Research Director Brendan FitzGerald told *FierceHealthIT*.

And health IT leaders aren’t satisfied with the status quo. More than half (68 percent) of respondents in HIMSS Analytics’ most recent imaging IT survey who were planning to purchase a new system or upgrade or replace their current system said their primary driver was additional functionality.

**PACS: ROOM TO GROW**

Even as picture archiving and communication systems (PACS) have evolved to make images available anywhere at any time, enterprise image viewing functionality is still a pain point.

“PACS is good for many things; it’s changed the way we practice and we’re not going back to film, for sure,” Reuben Mezrich, a professor and former chairman of the department of diagnostic radiology and nuclear medicine at the University of Maryland School of Medicine, told *FierceHealthIT* in a previous interview.
use to identify new patients at risk for the conditions and treat them quickly.

After successful pilots, the organization expanded its efforts to managing population health.

That program places an emphasis on patient screening—looking at data about environmental factors and conditions such as diabetes and hypertension among populations of patients. That allows clinicians to provide more proactive, data-based care. “We can direct care based on the latest research and historical data on the patient,” Rush CIO Lac Tran said in an interview with FierceHealthIT.

Rush uses its data warehouse and a dashboard to put the analytics out in front of the clinician so they can adjust the treatment, as necessary, at the point of care.

“The narrow focus [of our stroke program] at the start worked well,” Tran said. It fostered teamwork and collaboration, not just among the physicians in the ED, but with the stroke and cardiovascular specialists and cardiologists.

Further, once you have a team of experts who’ve worked on a specialized program, they’ll become champions, Tran said. “And once you have that credibility, you can expand,” he added.

Others at the event agreed that one of the best ways to solve the too-much-data challenge is to start with a small but focused program that can deliver results.

**USING DATA TO PREDICT OUTCOMES, REDUCE READMISSIONS**

St. Francis Hospital has used data analytics to solve some of the most pressing challenges facing healthcare providers today: Reducing costly readmissions, predicting outcomes in order to deliver more efficient, effective care and cutting length of patient stays.

With data, “we can provide a much, much better outcome for our patients [and] reduce the risk of being a financial outlier,” Christian said. “At the end of the day, we’re trying to save money.”

“But it’s incomplete because of the way it’s evolved as a standalone system. It needs to be integrated far better into the hospital or clinical information systems, and there has to be an enormously improved means of communication between physicians and radiologists,” he added.

**MOBILE IMAGE ACCESS: SLOW BUT RISING**

Another key finding, FitzGerald said, is that mobile access to images will grow significantly over the next several years. For example, only 8.2 percent of respondents were making images accessible through smartphones—a number that should more than quadruple within two years. Images also increasingly are being made available through image-enabled electronic health records.

“Tablets, smartphones and image-enabled EHRs are the future growth areas,” FitzGerald said.

**THE CLOUD: AN ECONOMIC OPTION**

Cloud-based systems for storage and sharing can reduce the costs associated with buying and maintaining in-house servers, particularly for smaller hospitals and provider groups.

“Providers can get greater economies of scale by looking at companies already in the file storage and exchange space … and others not traditionally in the imaging space,” said Eliot Siegel, M.D., vice chairman of diagnostic radiology and nuclear medicine at the 816-bed University of Maryland Medical Center and chief of radiology and nuclear medicine at the Veterans Affairs Maryland Healthcare System, both in Baltimore.
Like Rush, the organization used historic data—in this case to identify patients at risk for readmissions while they were still hospitalized. As they delved further into the data, the team found they could also predict which patients are at risk for an extended length-of-stay and work to avoid it.

“That doesn’t mean we boot them out of the door quickly,” Christian said. “It means that we ask ‘What are we not doing appropriately? Are we waiting a day or two to do certain diagnostic procedures or do we have a physician or group of physicians that chronically keep their patients a day or two longer than they could?’”

“Among all the data points, one stood out: Where patients were going for their post-acute care, such as a skilled nursing facility, and what other services they need, such as a visiting nurse, impacted both readmission rates and length-of-stay.

For example, discharging patients late in the day was making it difficult to place patients in the best post-acute care setting. And data from readmission rates showed room for improvement in communications with receiving facilities.

To improve the discharge process, the organization created a communication platform that enables caregivers at different settings to exchange information about patients. Receiving facilities can

Centralized image storage, whether cloud-based or in a vendor-neutral archive on local servers, can also dramatically reduce resources devoted to backups and disaster recovery, according to Siegel.

“Many healthcare organizations have images that are stored in modalities, PACS and at the enterprise level, too,” he said. “That level of duplication requires a tremendous amount of time for backup and costly redundancies—it’s very inefficient. An increasing number of CIOs are requiring central storage under the IS group so they can consolidate resources, back up just one system and minimize redundancies.”

Even though all of the different options for viewing and sharing images have benefits and drawbacks, and although the road to interoperability has been a bumpy one, even greater improvements are on the horizon.

“What we’re seeing now is a whole bunch of converging, intelligent solutions on the same highway,” David Mendelson, M.D., director of radiology information systems at The Mount Sinai Medical Center in New York City, told FierceHealthIT.
watch patients’ progress to do better reviews and assessments, for example.

“We could decrease overhead and effort required to make those initial assessments and save the post-acute care organizations time, which equates to money,” Christian said.

**GET PHYSICIANS ON BOARD**

Another common concern among attendees at the event: Going beyond data collection to put that information to use at the point of care and impact outcomes.

Getting physician buy-in is also a perennial challenge. Doctors and nurses must be involved in these projects from the beginning, said one attendee. Otherwise, they’ll undermine your efforts—and you won’t even know it.

Clinical champions are key to ensuring data doesn’t just sit on a shelf—and the data is one of the keys to recruiting them and affecting change.

“Physicians, when presented with good data, will respond to it—particularly when you’re doing comparative analysis with their peers,” Christian said.

But data must be designed and presented so clinicians will trust it is accurate. For example, risk-adjusted population data addresses the common protest from doctors that their patients are sicker than other populations.

“Once the physicians are presented with the appropriate information, they will respond accordingly,” Christian said. “That’s part of the reason for the pilot phase, so that we can build in that trust ... that the information is accurate and that my actions based on it are not going to be a waste of time.”

Added Tran: “Physicians are bought in [when] the end result is really enhancing their treatment and enhancing their patients’ safety and also enhancing their patients’ experience.”

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